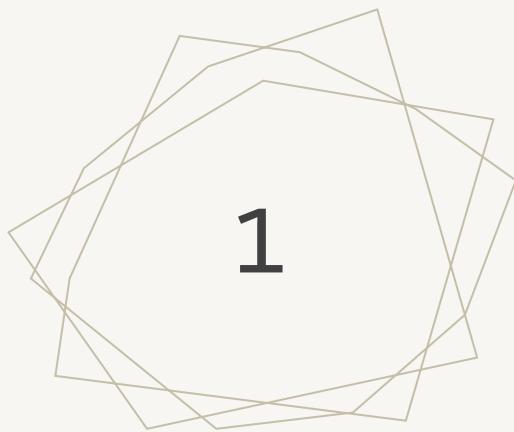


# **SMARTQUIZZER: ADAPTIVE AI POWERED QUIZ GENERATION ENGINE**

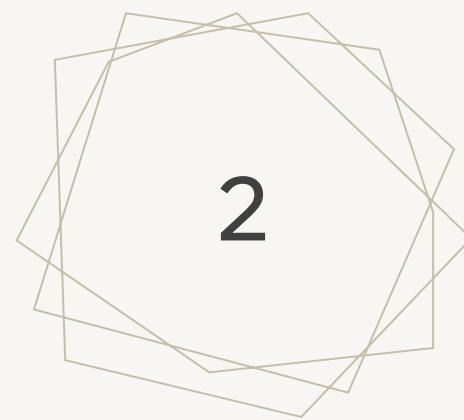
**MENTOR:**  
P.SATHYA Ma'am

**TEAM MEMBERS:**  
Rajesh Raftar  
Nikhil Puppalwar  
Tanu Tyagi  
S Thejaswini

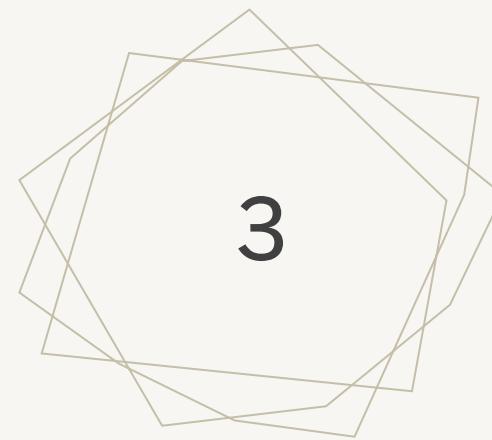
# TABLE OF CONTENTS:



INTRODUCTION



PROBLEM STATEMENT



PROJECT OVERVIEW

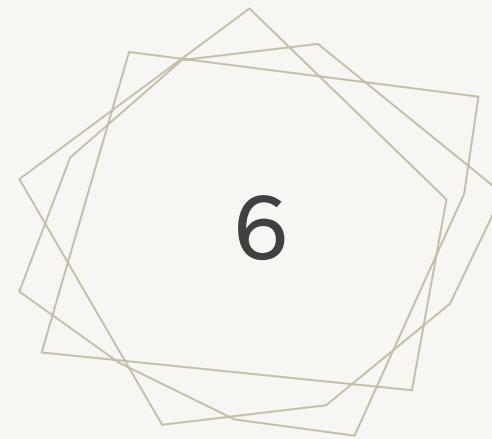
# TABLE OF CONTENTS:



KEY FEATURES



TECHNOLOGY STACK

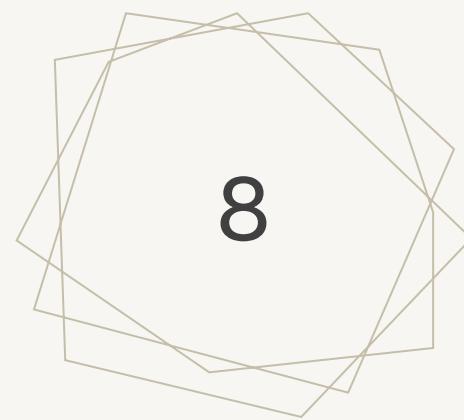


SYSTEM ARCHITECTURE

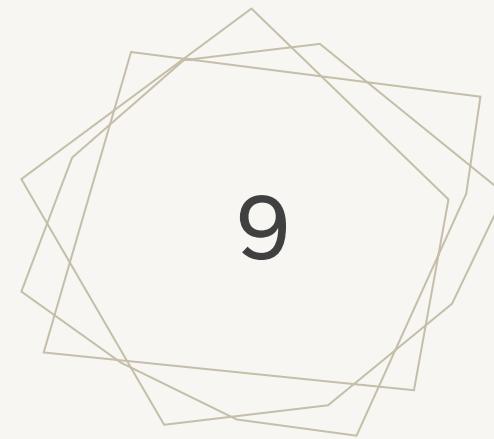
# TABLE OF CONTENTS:



APPLICATION FLOW

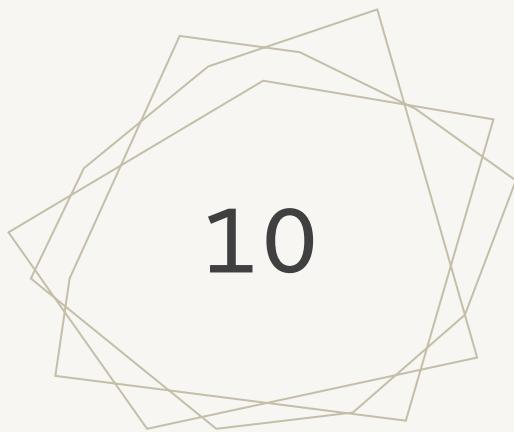


AI FEEDBACK SYSTEM

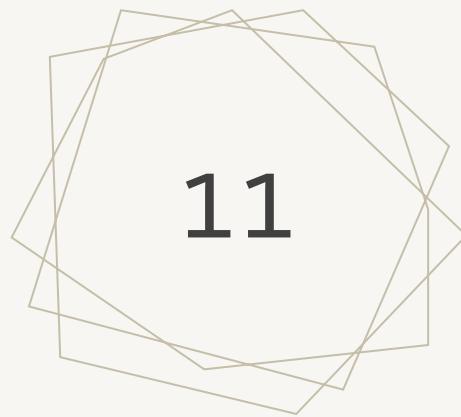


RESULTS AND ANALYSIS

## TABLE OF CONTENTS:



SCREENSHOTS



CONCLUSION



FUTURE ENHANCEMENTS

## INTRODUCTION:

- Traditional quiz tools are **static** and do not adapt to learner skill.
- Students struggle to find quizzes that match their **difficulty level** or **learning pace**.
- AI **SmartQuizzer** solves this by generating **personalized, adaptive quizzes** from any learning material.
- Built using Groq's **LLaMA 3.1** model for intelligent question creation.

## PROBLEM STATEMENT:

Learners face challenges like:

- Generic, non-adaptive quiz systems
- No personalization based on performance
- Limited variety of question types
- Difficulty analyzing learning progress

**Need:** A dynamic, data-driven quiz system that adjusts to user performance.

## PROJECT OVERVIEW:

AI SmartQuizzer enables:

- Uploading learning materials (PDF, Text, URL)
- Automatic quiz creation using AI
- Difficulty adjustment based on user performance
- Performance analytics with charts and statistics
- User accounts with saved preferences

## KEY FEATURES:

- Content Ingestion (PDF/Text/URL)
- AI-generated Questions (MCQ, T/F, Short Answer, Fill in the Blanks)
- Adaptive Difficulty Engine
- Analytics Dashboard
- Admin Panel for Moderation
- Secure Authentication System

## TECHNOLOGY STACK:

**Backend:** Python Flask

**AI:** Groq API – LLaMA 3.1

**Database:** SQLite + SQLAlchemy ORM

**Frontend:** HTML, CSS, JavaScript

**Visualization:** Chart.js

**PDF Parsing:** PyMuPDF

# SYSTEM ARCHITECTURE:

Three-tier architecture:

## Presentation Layer

- HTML (Jinja2 templates)
- JavaScript (quiz logic, real-time updates)
- Chart.js for analytics

## Application Layer

- Flask backend
- AI-based question generation
- Adaptive learning logic

## Data Layer

- SQLAlchemy ORM
- SQLite Database

## APPLICATION FLOW:

- User interacts via UI
- Flask routes receive request
- Backend triggers business logic
- AI model or database performs processing
- Response (HTML/JSON) sent back to user

## AI FEEDBACK SYSTEM:

Feedback includes:

- Encouragement message
- Weak areas & concepts needing improvement
- Study recommendations
- Motivation to continue learning

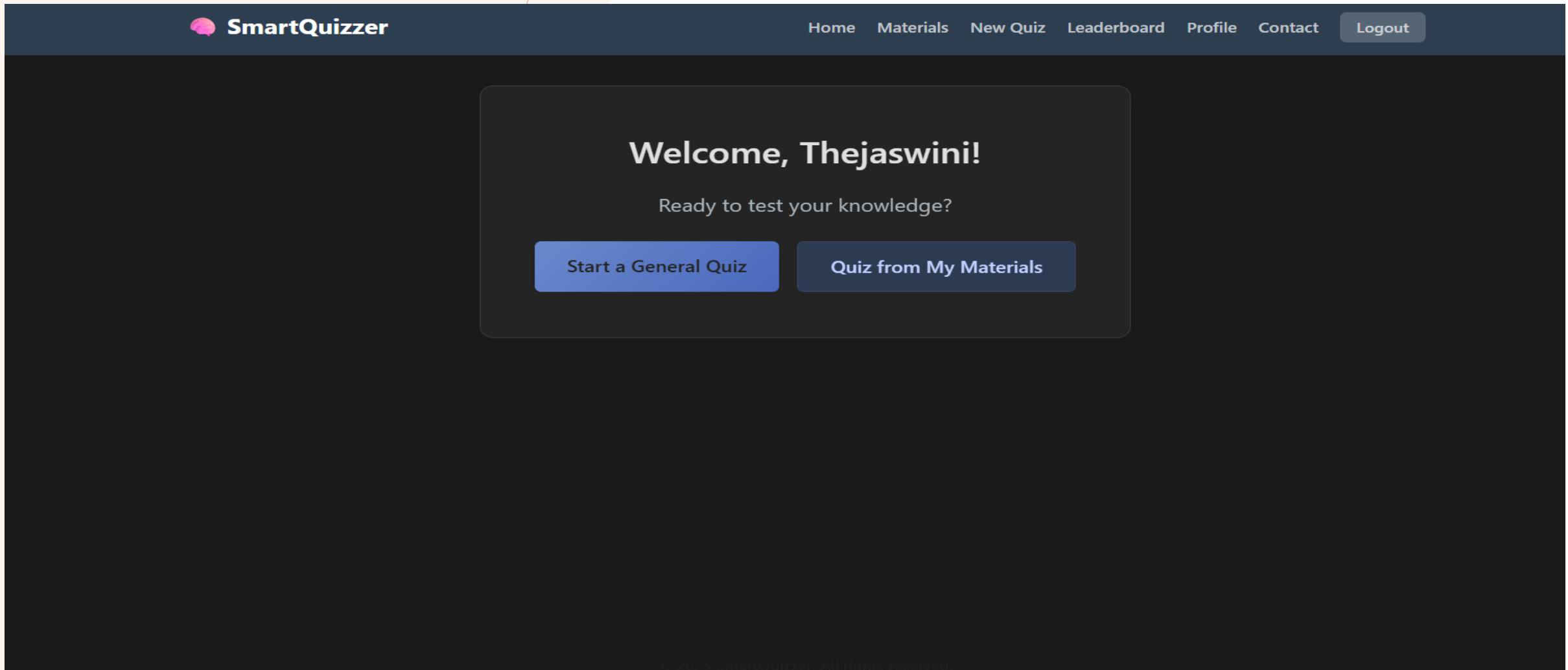
Appears at the end of each quiz attempt.

## RESULTS AND ANALYSIS:

Displays:

- Total quizzes taken
- Total questions attempted
- Overall accuracy
- Avg. time per question
- Score trends over time (line chart)
- Subject performance (bar chart)
- Score distribution (doughnut chart)
- Personal best attempt summary

# SCREENSHOTS:



The screenshot shows the homepage of the SmartQuizzer application. At the top, there is a dark blue header bar with the logo "SmartQuizzer" on the left, which includes a small icon of a brain inside a speech bubble. To the right of the logo are several navigation links: "Home", "Materials", "New Quiz", "Leaderboard", "Profile", "Contact", and a "Logout" button. Below the header is a large, rounded rectangular button with a dark background. Inside this button, the text "Welcome, Thejaswini!" is displayed in white, followed by the question "Ready to test your knowledge?". At the bottom of the button are two blue rectangular buttons with white text: "Start a General Quiz" on the left and "Quiz from My Materials" on the right. The rest of the page has a dark background.

SmartQuizzer

Home Materials New Quiz Leaderboard Profile Contact Logout

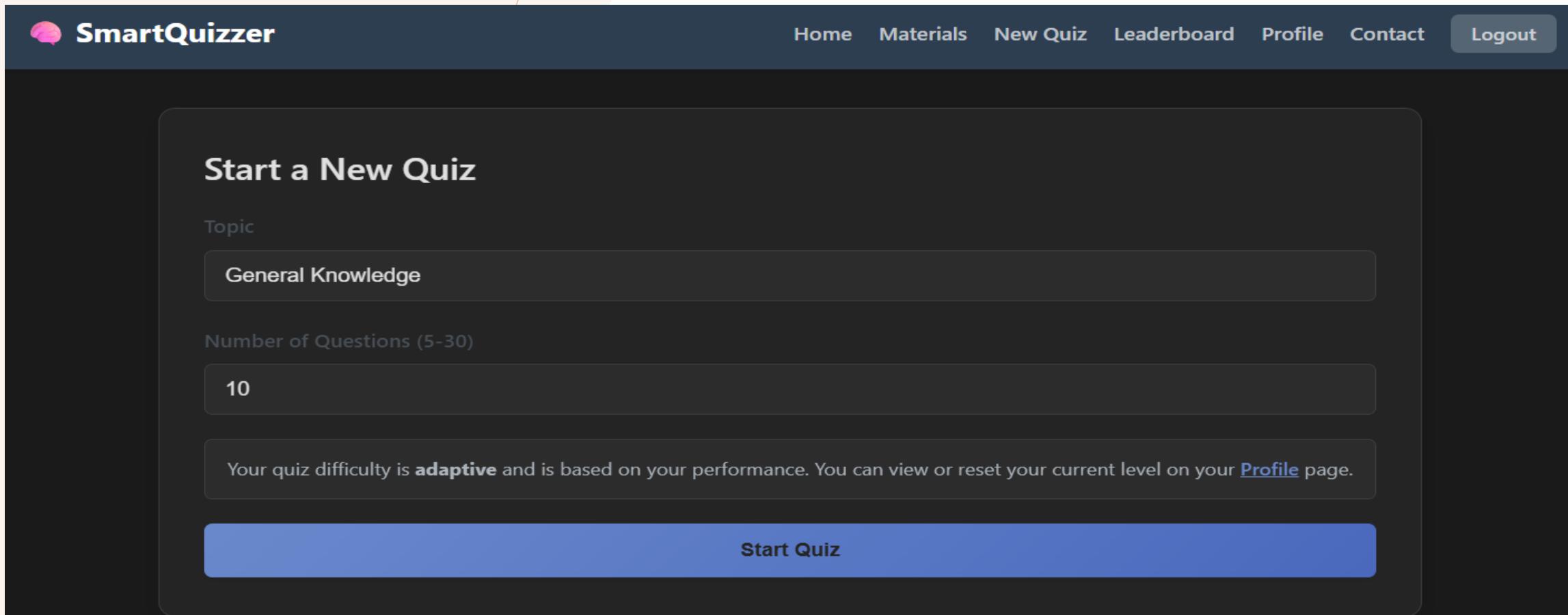
Welcome, Thejaswini!

Ready to test your knowledge?

Start a General Quiz Quiz from My Materials

© 2025 SmartQuizzer. All rights reserved.

# SCREENSHOTS:



A screenshot of the SmartQuizzer website's "Start a New Quiz" page. The page has a dark background with light-colored input fields. At the top left is the "SmartQuizzer" logo with a pink brain icon. The top right features a navigation bar with links: Home, Materials, New Quiz, Leaderboard, Profile, Contact, and Logout. Below the navigation is a large, rounded rectangular form. Inside, the title "Start a New Quiz" is displayed above a "Topic" field containing "General Knowledge". Below that is a "Number of Questions (5-30)" field containing "10". A note below the fields states: "Your quiz difficulty is **adaptive** and is based on your performance. You can view or reset your current level on your [Profile](#) page." At the bottom is a large blue button with the text "Start Quiz" in white.

SmartQuizzer

Home Materials New Quiz Leaderboard Profile Contact Logout

Start a New Quiz

Topic

General Knowledge

Number of Questions (5-30)

10

Your quiz difficulty is **adaptive** and is based on your performance. You can view or reset your current level on your [Profile](#) page.

Start Quiz

# SCREENSHOTS:

The screenshot shows a dark-themed user interface for the SmartQuizzer platform. At the top, there's a navigation bar with the logo 'SmartQuizzer' (featuring a brain icon), followed by links for Home, Materials, New Quiz, Leaderboard, Profile, Contact, and Logout.

The main area displays a quiz question: "What is the largest planet in our solar system?". The question is categorized as "MCQ (Single)". Above the question, it says "Question 1 of 5". To the right, it shows "Time: 3s" and "Score: 1".

The question has four options:

- Earth
- Saturn
- Jupiter
- Uranus

The option "Jupiter" is highlighted with a green border and a green checkmark to its right, indicating it is the correct answer. Below the question, a green box contains the feedback: "Correct! Jupiter is the largest planet in terms of both mass and size. It is a gas giant with a diameter of approximately 142,984 kilometers." At the bottom, there's a link to "Report an issue:".

# SCREENSHOTS:

The screenshot shows a quiz interface for 'SmartQuizzer'. At the top, there's a navigation bar with a logo, 'SmartQuizzer', and links for 'New Quiz', 'Leaderboard', 'Profile', 'Contact', and 'Logout'. A message 'Difficulty adjusted: MEDIUM → HARD' is displayed. Below the header, the quiz details are shown: 'Question 3 of 5', 'True/False', 'Time: 2s', and 'Score: 3'. The main question is 'The Great Barrier Reef is the world's largest living structure.' Two options are presented: 'True' (selected) and 'False'. A green box at the bottom left indicates 'Correct!' with a checkmark. The feedback text reads: 'The Great Barrier Reef is indeed the world's largest living structure, composed of over 2,900 individual reefs and 900 islands.' There's also a section for reporting issues with placeholder text 'e.g., Unclear question, wrong answer...'. A small link 'Flag as inappropriate/incorrect' is at the bottom.

SmartQuizzer

Difficulty adjusted: MEDIUM → HARD

New Quiz Leaderboard Profile Contact Logout

Question 3 of 5

True/False

Time: 2s

Score: 3

The Great Barrier Reef is the world's largest living structure.

True ✓

False

**Correct!**

The Great Barrier Reef is indeed the world's largest living structure, composed of over 2,900 individual reefs and 900 islands.

Report an issue:

e.g., Unclear question, wrong answer...

Flag as inappropriate/incorrect

## SCREENSHOTS:



**Correct!**

The Great Barrier Reef is indeed the world's largest living structure, composed of over 2,900 individual reefs and 900 islands.

**Report an issue:**

e.g., Unclear question, wrong answer...

Flag as inappropriate/incorrect

**Submit Feedback**

# SCREENSHOTS:

Question 5 of 5      True/False      Time: 5s      Score: 4

The human nose can detect over 1 trillion different scents.

True ✓

False ✗

**✗ Incorrect**

Research suggests that the human sense of smell is capable of detecting an astonishing number of different odors.

💡 *Incorrect. The correct answer was: True*

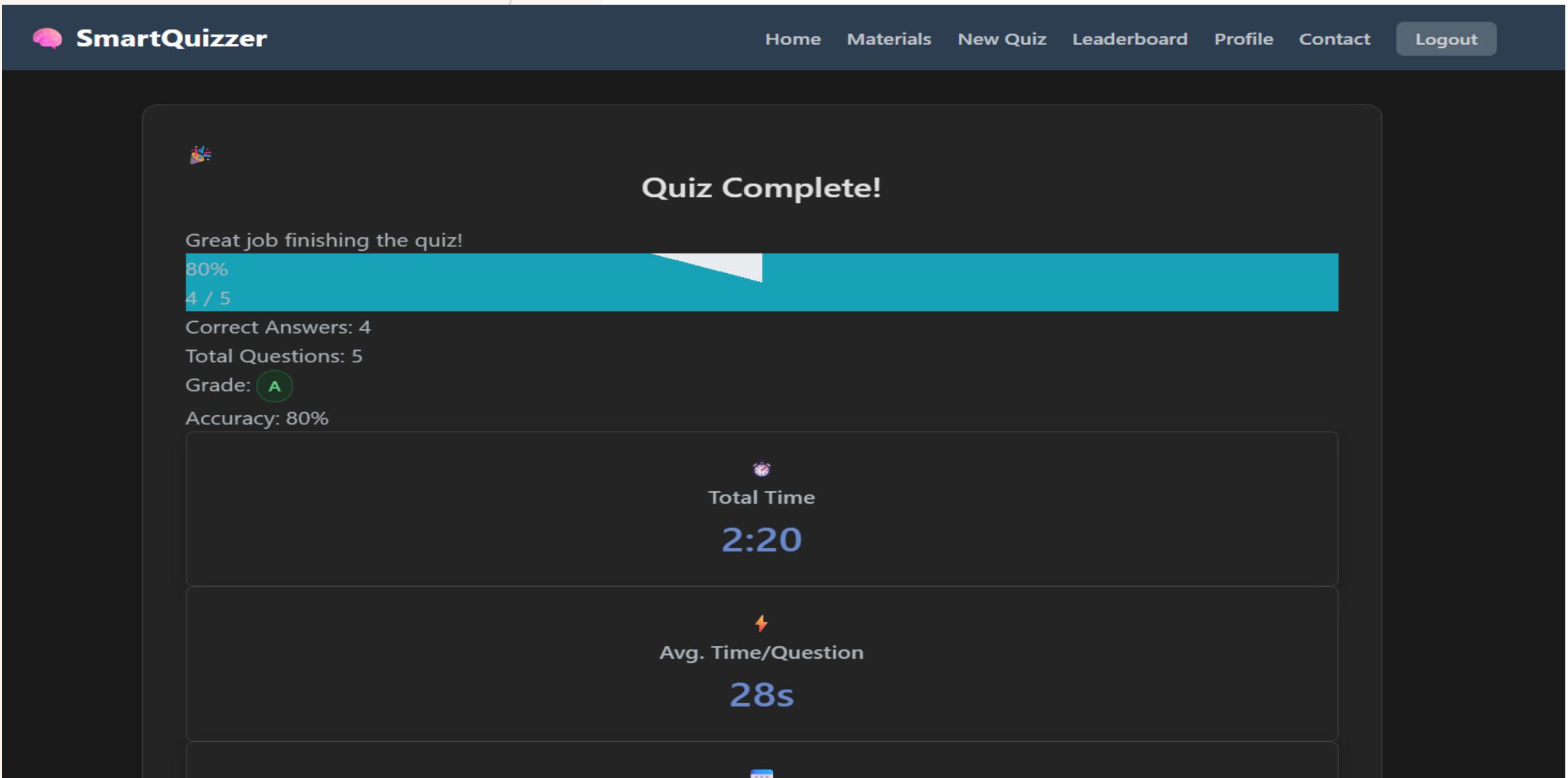
Report an issue:

e.g., Unclear question, wrong answer...

Flag as inappropriate/incorrect

**Submit Feedback**

# SCREENSHOTS:



A screenshot of the SmartQuizzer application interface showing a quiz completion summary. The top navigation bar includes links for Home, Materials, New Quiz, Leaderboard, Profile, Contact, and Logout. The main content area displays a large teal progress bar indicating 80% completion (4 / 5 questions). Summary statistics include: Great job finishing the quiz!, 80% accuracy, 4 correct answers, 5 total questions, Grade A, and a total time of 2:20. Below this, average time per question is shown as 28 seconds.

SmartQuizzer

Home Materials New Quiz Leaderboard Profile Contact Logout

Quiz Complete!

Great job finishing the quiz!

80%

4 / 5

Correct Answers: 4

Total Questions: 5

Grade: A

Accuracy: 80%

Total Time

2:20

Avg. Time/Question

28s

# SCREENSHOTS:

The screenshot shows a dark-themed mobile application interface. At the top, there is a navigation bar with a back arrow icon and the text "QUIZZIT". Below the navigation bar, the word "Completed" is displayed next to a small calendar icon. The main title "Today, 6:18 PM" is centered above a large rectangular box. Inside this box, there is a difficulty icon (a target with a bullseye) and the word "Difficulty" followed by "Hard". Below this section, a message says "Excellent performance! You're doing great!" with a small emoji. A "Personalized Feedback" section follows, containing the text "Great job on the quiz! An 80% score is excellent, showing your strong foundation in General Knowledge." and "Areas to Review: It seems you may have missed a couple of questions, including one about the human nose's ability to detect scents. Don't worry, this is a great opportunity to learn and improve!". Another "Study Tip" section encourages users to familiarize themselves with interesting facts. At the bottom of the screen, there is a "Review Your Answers" section with a question about Jupiter and a "Your answer" field showing "Jupiter".

Completed

Today, 6:18 PM

Difficulty

Hard

Excellent performance! You're doing great!

**Personalized Feedback**

**Great job on the quiz! An 80% score is excellent, showing your strong foundation in General Knowledge.**

**Areas to Review:** It seems you may have missed a couple of questions, including one about the human nose's ability to detect scents. Don't worry, this is a great opportunity to learn and improve!

**Study Tip:** Try to familiarize yourself with interesting and lesser-known facts, like the one about the human nose. This will help you build a broad knowledge base.

*You're on the right track! Keep studying, stay curious, and you'll see continuous improvement in your scores.*

**Review Your Answers**

**Q1: What is the largest planet in our solar system?**

| Your answer: Jupiter

*Explanation: Jupiter is the largest planet in terms of both mass and size. It is a gas giant with a diameter of approximately 142,984 kilometers.*

# SCREENSHOTS:

*Explanation: Jupiter is the largest planet in terms of both mass and size. It is a gas giant with a diameter of approximately 142,984 kilometers.*

## **Q2: Which of the following elements are noble gases?**

| Your answer: Helium

| Correct answer(s): Helium

*Explanation: Noble gases are a group of elements that are chemically inert. Helium is one of the noble gases, known for its light and buoyant properties.*

## **Q3: The Great Barrier Reef is the world's largest living structure.**

| Your answer: True

*Explanation: The Great Barrier Reef is indeed the world's largest living structure, composed of over 2,900 individual reefs and 900 islands.*

## **Q4: What is the chemical symbol for gold?**

| Your answer: Au

*Explanation: The chemical symbol Au is derived from the Latin word for gold, 'aurum'.*

## **Q5: The human nose can detect over 1 trillion different scents.**

| Your answer: False

| Correct answer: True

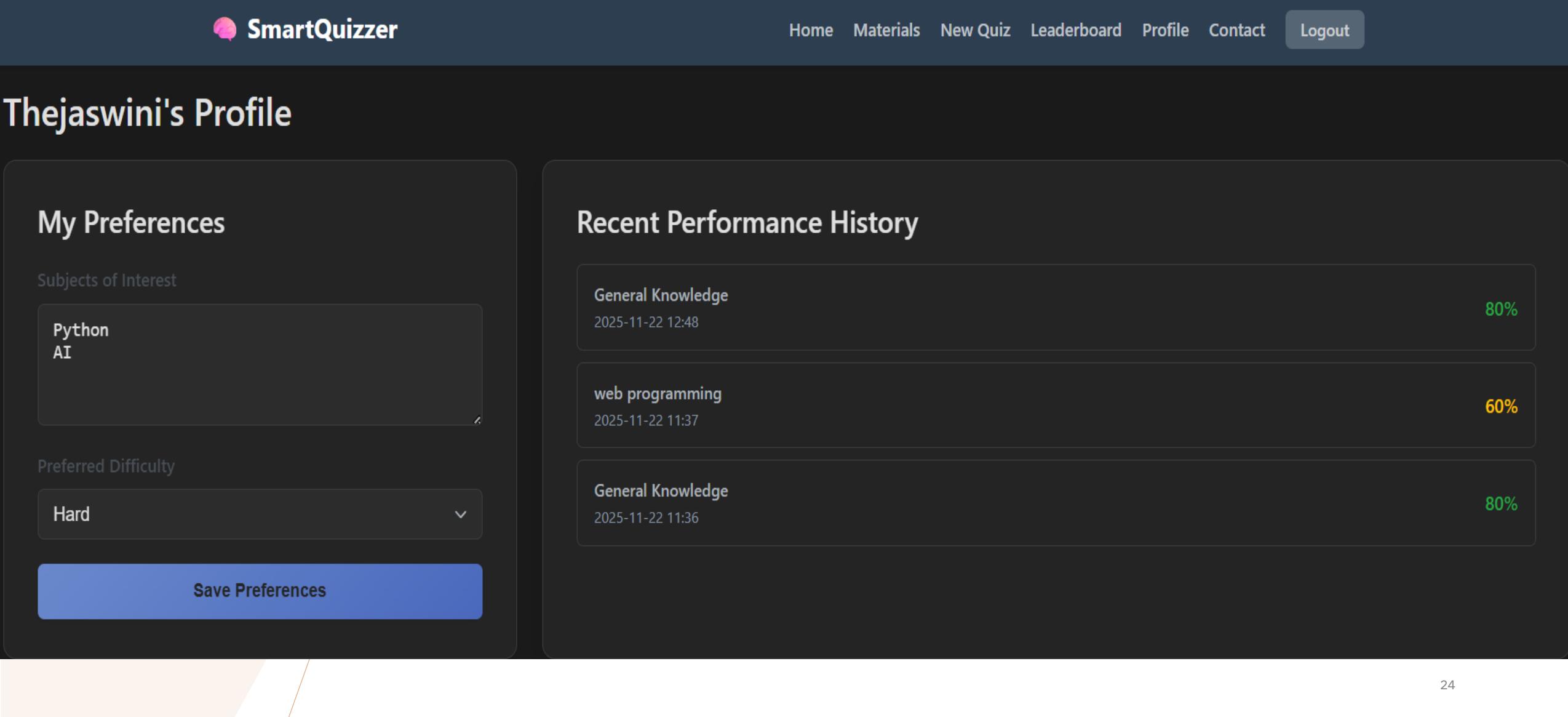
*Explanation: Research suggests that the human sense of smell is capable of detecting an astonishing number of different odors.*

 [Retry This Quiz](#)

 [Start New Quiz](#)

 [View Analytics](#)

# SCREENSHOTS:



The image shows a screenshot of the SmartQuizzer application interface. At the top, there is a dark blue header bar with the logo "SmartQuizzer" and a brain icon on the left. To the right of the logo are navigation links: Home, Materials, New Quiz, Leaderboard, Profile, Contact, and Logout. Below the header, the main content area has a dark background. On the left side, there is a sidebar titled "My Preferences" containing sections for "Subjects of Interest" (with "Python" and "AI" listed) and "Preferred Difficulty" (set to "Hard"). At the bottom of this sidebar is a blue button labeled "Save Preferences". On the right side, there is a section titled "Recent Performance History" which lists three quiz entries: "General Knowledge" from 2025-11-22 12:48 with a score of 80%, "web programming" from 2025-11-22 11:37 with a score of 60%, and another "General Knowledge" entry from 2025-11-22 11:36 with a score of 80%.

## Thejaswini's Profile

### My Preferences

Subjects of Interest

Python  
AI

Preferred Difficulty

Hard

Save Preferences

### Recent Performance History

General Knowledge

2025-11-22 12:48

80%

web programming

2025-11-22 11:37

60%

General Knowledge

2025-11-22 11:36

80%

24

# SCREENSHOTS:

## My Analytics

TOTAL QUIZZES

3

TOTAL QUESTIONS

15

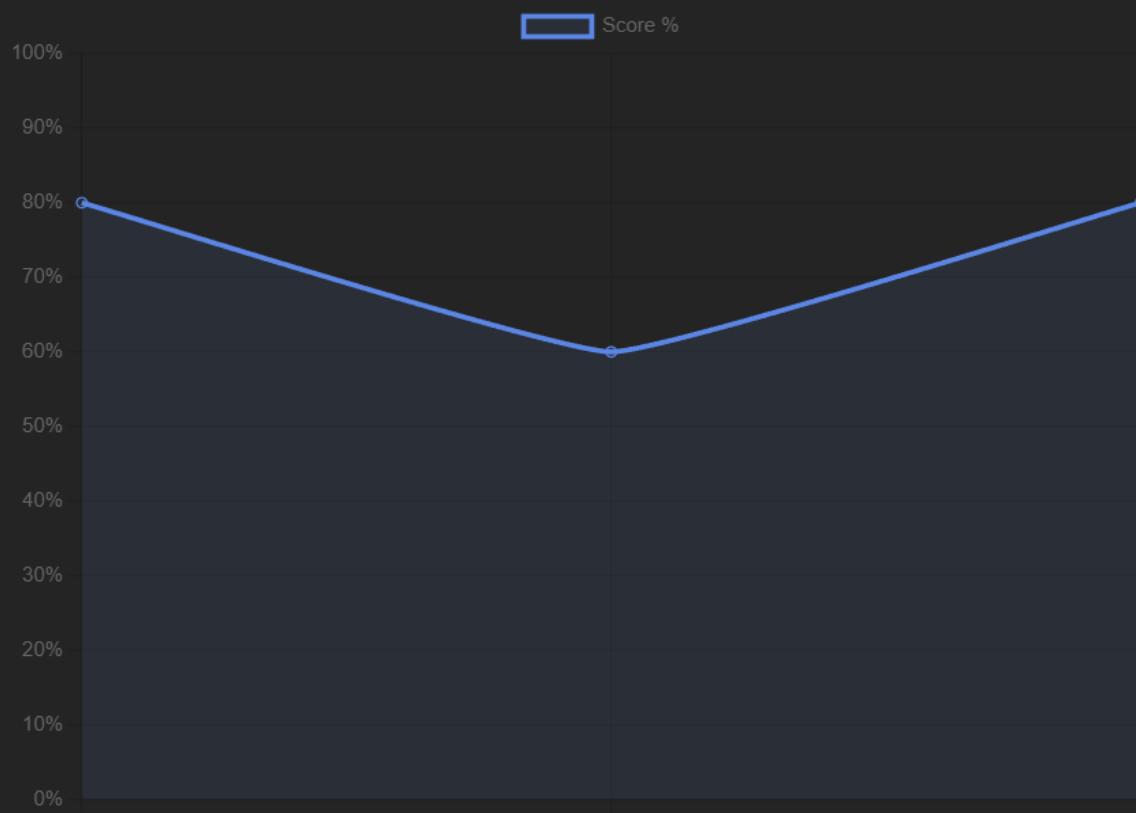
OVERALL ACCURACY

73.3%

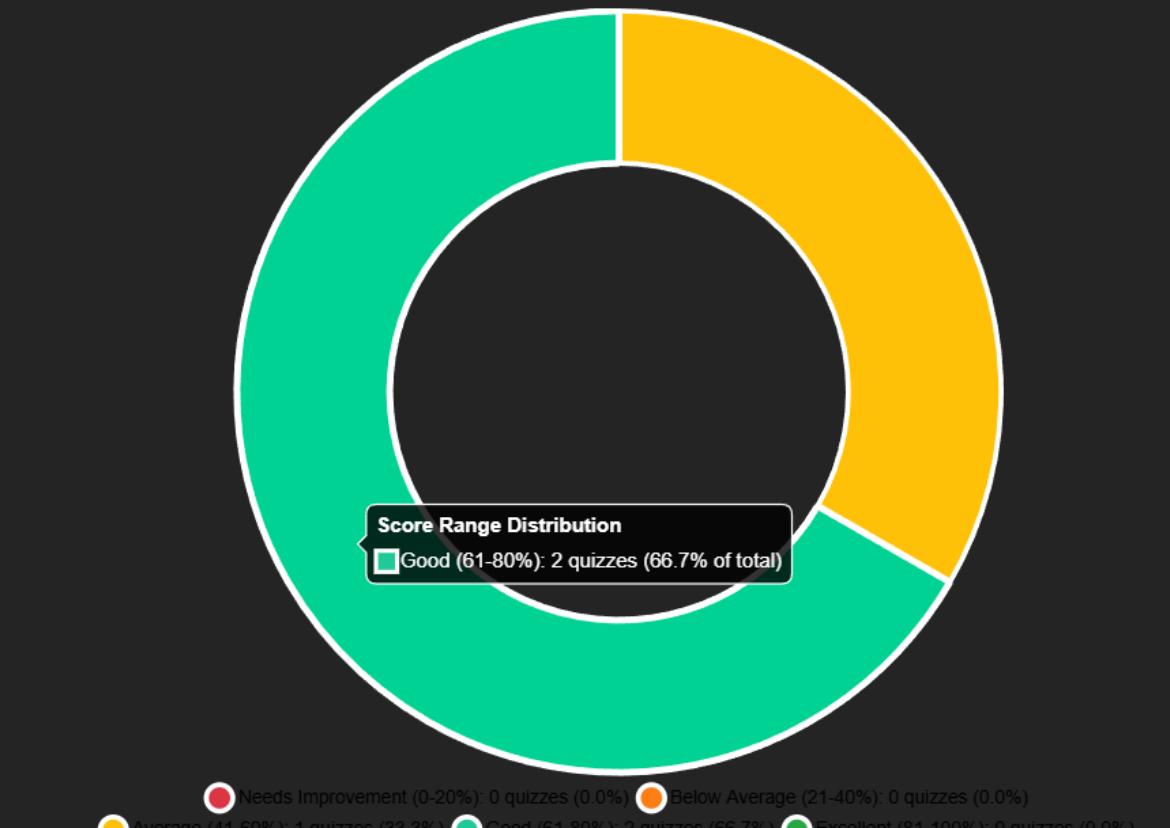
AVG. TIME / Q

5.4s

### Performance Over Time



### Score Distribution



# SCREENSHOTS:

## Performance by Subject



# SCREENSHOTS:

## Personal Best Scores

Topic	Score	Grade	Date
General Knowledge	80% (4/5)	A	2025-11-22 12:48
General Knowledge	80% (4/5)	A	2025-11-22 11:36
web programming	60% (3/5)	C	2025-11-22 11:37

## Recent Attempts

Topic	Score	Grade	Date	Action
General Knowledge	80% (4/5)	A	2025-11-22 12:48	<button>View</button>
web programming	60% (3/5)	C	2025-11-22 11:37	<button>View</button>
General Knowledge	80% (4/5)	A	2025-11-22 11:36	<button>View</button>

1

# SCREENSHOTS:

## All Quiz Attempts

Topic	Sort by	Order			
Filter by topic	Date	Desc	Apply		
#	Topic	Score	Grade	Date	Action
1	General Knowledge	80% (4/5)	A	2025-11-22 12:48	<button>View</button>
2	web programming	60% (3/5)	C	2025-11-22 11:37	<button>View</button>
3	General Knowledge	80% (4/5)	A	2025-11-22 11:36	<button>View</button>

1

# SCREENSHOTS:

## General Knowledge - Quiz Details



### Quiz Summary

Topic:

General Knowledge

Score:

4/5 (80%)

Completed:

2025-11-22 12:48

### Question 1

✓ Correct

What is the largest planet in our solar system?

#### Options:

A. Earth

B. Saturn

C. Jupiter

D. Uranus

Correct Answer: 2

Your Answer: —

# SCREENSHOTS:



Home Materials New Quiz Leaderboard Profile Contact Logout

## My Learning Materials

[Upload New Material](#)

web programming

Type: PDF | Uploaded: 2025-11-18

[View & Quiz](#)

## CONCLUSION:

- AI SmartQuizzer provides **personalized, adaptive learning**
- Combines modern AI + web tech for dynamic quiz generation
- Helps students learn efficiently with real-time analytics
- Designed with modular architecture for scalability
- Suitable for both self-learners & institutions

## FUTURE ENHANCEMENTS:

- Add web scraping for URL-based content ingestion
- Improve feedback clarity using deeper LLM reasoning
- Add gamification (badges, levels)
- Support for more advanced LMS integration
- Voice-based quiz interaction



**THANK YOU**